

We claim:

1. A flow-through electrochemical reactor comprising:  
a body having an internal chamber, and an inlet port  
5 and an outlet port in communication with said internal  
chamber to permit flow of wastewater therethrough;  
at least one porous anode arranged in said internal  
chamber such that the wastewater flowing between said inlet  
port and said outlet port flows through the pores of said at  
10 least one porous anode, said at least one porous anode  
having activity for the destruction of a target substance;  
and  
at least one cathode disposed in the internal chamber  
to permit an electric current to be established between said  
15 at least one cathode and said at least one anode, said  
electric current reducing the concentration of said target  
substance in the wastewater flowing through the chamber.
2. A flow-through electrochemical reactor according to  
20 claim 1, wherein the porous anode comprises a foam.
3. A flow-through electrochemical reactor according to  
claim 1, wherein the porous anode comprises a substrate  
having an anodic coating.
- 25 4. A flow-through electrochemical reactor according to  
claim 3, wherein the substrate is tantalum or titanium.
- 30 5. A flow-through electrochemical reactor according to  
claim 3, wherein the anodic coating is selected from the  
group consisting of platinum, tantalum-doped iridium dioxide  
and antimony-doped tin dioxide.

6. A flow-through electrochemical reactor according to  
claim 1, wherein the at least one cathode is a porous  
cathode, and wherein the at least one porous cathode is  
5 sized in the internal chamber so that the wastewater passes  
through the pores of the porous cathode.
7. A flow-through electrochemical reactor according to  
claim 6, wherein the porous cathode comprises a foam.  
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8. A flow-through electrochemical reactor according to  
claim 1, wherein the cathode comprises nickel.
9. A flow-through electrochemical reactor according to  
claim 1, wherein the body is tubular and the internal  
15 chamber is generally cylindrical, and wherein each anode and  
cathode is supported by an insulating holder sized to be  
slidably inserted into the internal chamber.
- 20 10. A flow-through electrochemical reactor according to  
claim 1, wherein the reactor comprises from two to ten  
anodes and from three to eleven cathodes, respectively, in  
alternating arrangement.
- 25 11. A flow-through electrochemical reactor according to  
claim 10, wherein the reactor comprises seven cathodes and  
six anodes.
- 30 12. A flow-through electrochemical reactor according to  
claim 1, wherein the target substance comprises an aryl  
compound, and, in use, the reactor produces an electrical

current having a current density capable of oxidizing the aryl compound.

13. A flow-through electrochemical reactor according to  
5 claim 12, wherein the aryl compound is selected from the group consisting of phenol, o-cresol, m-cresol and p-cresol.

14. A flow-through electrochemical reactor according to  
claim 13, wherein the aryl compound is phenol.